THE MINERAL INDUSTRY OF TAIWAN

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Despite the outbreak of Severe Acute Respiratory Syndrome (SARS) in the second quarter of 2003, Taiwan's economy recovered in the second half and posted a positive rate of growth for the year. The island's gross domestic product posted a gain of 3.2% to New Taiwan (NT) $10.2 trillion ($307 billion). Much of the recovery was contributed by the increase of exports and the expansion in the manufacturing sector especially in electronics and information technology products. The Taiwan Institute of Economic Research predicted that Taiwan's economy would grow by 5% in 2004 partly in response to the rebound of the Japanese and the U.S. economies in late 2003 (Ministry of Economic Affairs, 2004, p. 3).

With limited mineral resources, Taiwan imported various minerals to meet its increasing demand. In 2003, the production index for fuel and nometallic mining sectors decreased by 4.8% and 22.2%, respectively, compared with those of 2002. Mining accounted for only 0.1% of total industrial production output value. The manufacturing output value of fuel, industrial minerals, and metals accounted for 22.0% of the total. Iron and steel was the leading metal production sector on the island. Other value-added manufacturing products, such as aluminum and copper, depended upon imported metals and scrap (Ministry of Economic Affairs, 2004, p. 5).

In the past several years, labor-intensive industries have been relocated to China, which prompted the Taiwan authorities and the local business community to develop high-technology and service-oriented industries. The transition has resulted in a higher unemployment rate as older industries moved away, and policymakers were required to mitigate the social and economic impacts of lost low-end jobs. The Council for Economic Planning and Development planned to invest $8.6 billion to expand public construction projects such as the Suao-Hualien Freeway and Kaohsiung mass transit system, and also initiated a plan through government subsidies, investment and loan guarantees for the private sector to spend $8.6 billion in free-trade zones during the next 3 years. The Ministry of Economic Affairs completed feasibility studies, and the Legislative Yuan approved the development of the Changpin Industrial Zone in central Taiwan, Heping Port in Hualien, Kuangtang Port in Taoyuan County, and Mailiao Port in Yunlin County (Taiwan Headlines, 2003a§[1]).

In 2003, the Taiwan authorities continued their efforts to restructure the island's financial institutions and established 16 asset management companies to assist the authorities in dealing with nonperforming loans and to restore the health of the troubled banking sector. The goal for the Ministry of Finance (MOF) was to lower the nonperforming loan ratio to less than 5% ($4.79 billion) in 2004 (Taiwan Headlines, 2004§). The MOF planned to consolidate the island's 51 banks into several larger banks. The three largest banks—the Bank of Taiwan, the Taiwan Cooperative Bank, and the Land Bank of Taiwan—had a combined 26% of the market share. The MOF also intended to privatize three state-owned banks—the Bank of Taiwan, the Land Bank of Taiwan, and Central Trust of China—in 2006 (Taipei Times, 2003§). On December 31, 2003, amendments to the 1920 Mining Law took effect immediately.

The Legislative Yuan passed the Financial Institution Merger Law and Financial Holding Company Law in 2001 to allow financial institutions to have the flexibility to merge and to provide a wider range of financial services. It also passed the Financial Assets Securitization Statute in 2002. These new laws allowed companies greater flexibility in raising capital, strengthened shareholder protection, and encouraged business consolidations. A new agency, the Financial Supervisory and Management Committee, will be established on July 1, 2004, to oversee banks, securities, futures houses, and insurance companies. The Central Bank of China will retain the power to monitor financial activities related to monetary policy (China Post, 2004§).

In 2003, Taiwan's total trade increased by 11.1% to $273.6 billion. Values of exports and imports increased to $145.1 billion and $128.5 billion, respectively. Crude oil remained the leading imported commodity by value and was followed by coal, natural gas, iron ore, marble, and kaolin. Taiwan's largest exports were products of capital and technology-intensive sectors, such as electrical equipment, base-metal products, precision instruments, and musical instruments. Traditional labor-intensive products, such as cement, footwear, and textiles, had decreased significantly in the past decade in terms of export value and proportion of total exports. In 2003, China replaced the United States as Taiwan's the leading trading partner. The total trade with China was $46.3 billion followed by the United States with $44.6 billion and Japan with $42.8 billion (Ministry of Finance, 2003a, b).

Without any primary aluminum production on the island, aluminum product producers depended on imports of aluminum ingot and scrap to meet their needs. In 2003, the island produced 184,043 metric tons (t) of aluminum alloy products; this was a decline of about 59% compared with that of 1997. Owing to high production costs and a shortage of raw materials during the past several years, many aluminum producers either closed down their operations or moved their production facilities to China. Taiwan consumed about 600,000 metric tons per year of aluminum (Ministry of Economic Affairs, 2004, p. 133).

Owing to the sluggish demand in the public and private construction sectors and the outbreak of SARS in 2003, cement production decreased slightly. Because of the increased demand for cement in China and the Southeast Asian countries, the price of imported and domestic cement increased. Several public construction projects, which included mass railway transit projects, the CKS International Airport, and the Suao-Hualien Freeway, were postponed. Cement inventory in producers' warehouses reached an all-time high. In 2003, Taiwan consumed less than 16 million metric tons (Mt) of cement and this number was expected to increase only slightly in 2004 (Building Materials Industry Information, 2004; Ministry of Economic Affairs, 2004, p. 126).

[1] References that include a section mark (§) are found in the Internet References Cited section.

The Taiwan authorities relaxed existing regulations to allow sand and gravel extraction in southern Taiwan. During the past 5 years, domestic demand for sand and gravel reached about 66 million cubic meters per year. About 40% was extracted from rivers, 15% was imported from China, and the remainder was recycled from discarded building materials. The consumption of sand and gravel was expected to increase if all public projects proceeded as scheduled in 2004. Hualien County, which is located in the eastern part of the island, could supply about 50 million cubic meters of sand and gravel per year but transportation costs from Hualien to Kaohsiung were high. Increased mining in Hualien also created environmental problems in that area. The reopening of sand and gravel extraction operations in southern Taiwan could provide an additional 22 million cubic meters of raw material for the construction sector (Taiwan Headlines, 2003c§).

Shareholders of Southeast Cement Corp. approved the company's participation in the Chia Hsin Cement Corp. expansion project in China. Chia Hsin planned to invest $100 million to build a second kiln at its subsidiary Jing Yang Cement Co. in Jiangsu Province, China. After completion in 2006, Jing Yang will have a cement output capacity of 6 million metric tons per year (Mt/yr). Southeast was the fifth cement producer in Taiwan to invest in cement production in China, following Chia Hsin, Asia Cement Corp., Taiwan Cement Corp., and Universal Cement Corp. (International Cement Review, 2003).

Taiwan's leading cement producer Asia Cement Corp. planned to invest $607 million to expand its cement production facilities in China. The company intended to construct two cement plants in the Provinces of Hubei and Sichuan and to add two more kilns to its cement plant in Nanchang, Jiangxi Province. The total company output capacity was expected to reach 20 Mt in 2010 (10 Mt each in China and Taiwan) (International Cement Review, 2004).

In Asia, Taiwan was the fifth leading crude steel producer behind China, Japan, the Republic of Korea, and India. Without any iron ore resources, Taiwan depended on imports to meet its demand. Iron ore imports were sourced mainly from Australia, Brazil, and Canada. In 2003, crude steel consumption on the island was about 25 Mt, about 18 Mt of which was supplied by domestic steel producers. The remainder was imported mainly from, in order of the amount of iron imported, Russia, Brazil, Japan, Ukraine, China, and South Africa. The island also imported 3.2 Mt of steel scrap from Japan, Russia, the Philippines, and the United States to meet domestic shortages for its electric arc furnaces (Steel Statistics Monthly, 2004).

To meet domestic steel demand, three companies expressed interest in building an integrated iron and steel plant in Taiwan. China Steel Corp. (CSC), which was the largest steel producer and only pig iron producer in Taiwan, planned to construct a blast furnace with an annual output capacity of 1.5 to 1.7 Mt/yr in Taichung. Yeih United Steel Corp. (Yusco), which was the island's leading stainless steel producer, planned to construct a 12-Mt/yr integrated steel plant either in China or Taiwan. Formosa Plastics Group, which was the island's leading manufacturing company, also considered constructing a 10-Mt/yr integrated steel plant in either Zhangzhou, Fujiang Province, China, or Dacheng, Taiwan. Hoping to take advantage of the huge market for steel in China, Taiwan's steel producers, including CSC and Yusco through their subsidiaries or alliances, planned either to expand their output capacities or to construct new production facilities in China (Steel Statistics Monthly, 2003; Taiwan Headlines, 2003b§).

Owing to the increased demand for magnesium alloy chassis in electronic products, the consumption of magnesium in Taiwan increased sharply during the past couple of years. Magnesium consumption was 11,076 t in 2002 and was expected to increase to 15,000 t in 2003. The volume of magnesium ingot and chip imports increased by 70% in 2003 compared with that of 2002, and was expected to grow by 50% in 2004. In 2003, the Taiwan Magnesium Association was established to promote the magnesium industry and conduct product development (Magnesium Monthly Review, 2003).

Taiwan had no domestic coal production and depended on imported coal to meet its demand for coal. Taiwan Power Co. (Taipower) was the largest coal consumer on the island and imported about 52% of Taiwan's coal imports. To reduce shipping costs, the Taiwan authorities approved Taipower's importation of as much as 30% of its total coal requirements from China. In 2002, Taipower imported a total of 22.6 Mt, of which 57% was from Indonesia, and 11.4%, from China. The company planned to increase coal purchases from Indonesia and China and to reduce coal imports from Australia, South Africa, and the United States. The company also planned to increase the percentage of coal purchases made on the spot market to 60% in 2004 compared with 35% in 2002, and to consider investing in coal mines in China. Investment in China would have to be approved by the Taiwan authorities (Global Coal, 2003§).

Chinese Petroleum Corp.'s (CPC) overseas affiliate Oversea Petroleum and Investment Corp. and China National Offshore Oil Corp. formed a joint-venture company, Tainan-Chaoshan Petroleum Co., which was registered in the Virgin Islands; it had initial capital of $50 million. The joint venture will explore for oil in a 15,400-square-kilometer area in the southern part of Taiwan Strait. The partners will share the operating costs and exploration results equally. The initial study indicated that seven locations had potential oil resources. Drilling was scheduled to begin in 2003, but was postponed in May 2003 because of the outbreak of SARS in China and Taiwan. The Taiwan authorities approved CPC's request to establish representative offices in the cities of Beijing and Shanghai. In addition, CPC planned to set up offices in the cities of Chongqing, Guangzhou, Nanjing, and Shenyang under the auspices of the Oversea Petroleum and Investment Corp. to explore the petrochemical market in China. CPC planned to invest $450 million to explore oil resources in Australia, Peru, and Venezuela in 2004-08. CPC signed two separate contracts with China National Petroleum Corp. and China Petrochemical Corp. to refine oil for these companies. CPC expected to refine 3 million barrels per year of oil for each company (Chinese Petroleum Corp., 2004§).

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TABLE 1
TAIWAN: PRODUCTION OF MINERAL COMMODITIES [1]

(Metric tons unless otherwise specified)

Commodity		1999	2000	2001	2002	2003
METALS						
Gold, primary	kilograms	13	9	2	--	--
Iron and steel, metal:						
Pig iron	thousand tons	9,020	9,971	10,316	10,524	10,779
Ferrosilicon		3,212	2,975	1,181	--	--
Steel, crude	thousand tons	16,027	17,302	17,336	18,255	18,563
Nickel, refined[e]		10,000	10,000	11,000	11,000	11,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	18,283	17,572	18,128	19,363	18,474
Feldspar		171	409	147	--	510
Fire clay		3,703	3,666	5,641	2,083	7,546
Gypsum, precipitated		1,747	1,884	1,006	--	--
Lime[e]		800,000	800,000	800,000	800,000	800,000
Mica		6,966	6,862	9,733	6,595	3,237
Nitrogen, N content of ammonia		146,228	11,004	11,870	11,050	11,200
Salt, marine		76,916	69,521	66,150	56,720	191
Sodium compounds, n.e.s.:						
Caustic soda		329,640	426,040	466,630	508,760	568,180
Soda ash[e]		140,000	140,000	140,000	140,000	140,000
Stone:						
Dolomite	thousand tons	201	119	71	55	54
Limestone	do.	2,819	3,505	4,901	3,677	1,434
Marble	do.	17,755	17,831	20,475	23,736	21,041
Serpentine	do.	358	395	276	268	194
Sulfur		194,812	205,588	223,659	212,343	225,006
Talc		201	--	130	27	466
MINERAL FUELS AND RELATED MATERIALS						
Carbon black[e]		100,000	100,000	100,000	100,000	100,000
Coal, bituminous		91,673	83,380	--	--	--
Gas, natural:						
Gross	million cubic meters	848	742	849	887	831
Marketed[e]	do.	780	670	780	785	760
Petroleum:						
Crude	thousand 42-gallon barrels	296	234	279	321	288
Refinery products[e]	do.	230,000	240,000	250,000	260,000	270,000

[e]Estimated; estimated data are rounded to no more than three significant digits. -- Zero.
[1]Includes data available through May 30, 2004.

TABLE 2
TAIWAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2003

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilitites	Annual capacity[e]
Cement		Asia Cement Corp.	Hsinchu	1,800
Do.		do.	Hualien	4,020
Do.		Chia Hsin Cement Corp.	Kaohsiung	1,860
Do.		Chien Tai Cement Co. Ltd.	do.	1,720
Do.		Lucky Cement Corp.	Tungao	2,000
Do.		Southeast Cement Corp.	Kaohsiung	1,090
Do.		Taiwan Cement Corp.	Chutung	1,400
Do.		do.	Hualien	1,580
Do.		do.	Judung	1,220
Do.		do.	Suao	3,400
Do.		Universal Cement Corp.	Kaohsiung	1,550
Marble		Taiwan Marble Co., Ltd.	Panchiao	10
Nickel		Taiwan Nickel Refinery	Kaohsiung	14
Petroleum:				
Crude	thousand barrels per year	Chinese Petroleum Corp.	Chuhuangkeng and Tungtzuchiao	850
Refinery products	thousand barrels per day	do.	Kaohsiung	570
Do.	do.	do.	Taoyuan	200
Do.	do.	Formosa Plastics Group	Yunlin	450
Steel		China Steel Corp.	Kaohsiung	13,000
Do.		Feng Hsin Iron and Steel Co. Ltd.	Taichung Hsien	1,000
Do.		Yieh United Steel Co.	do.	1,000
Sulfur		China Petrochemical Development Corp.	Taipei	50
Titanium dioxide		DuPont Far East Co. Ltd.	Guanyin	100

[e]Estimated.